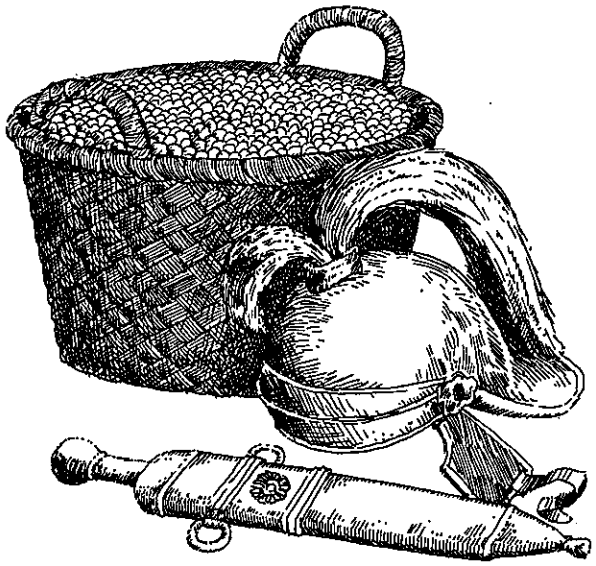
By 200 B.C. soldiers of the Roman Republic had conquered all of Italy except the Alps. In the following three hundred years they created an empire extending from Spain to the Persian Gulf. To insure their hold over these lands the Roman soldiers built permanent military camps. As the need for military force lessened, many camps became important cities of the Roman Empire. The Romans knew that well planned cities did more to maintain peace and security than twice the number of military camps. They also knew that a city was more than just a business, government, or religious center. It was all three, but most important, it had to be a place where people wanted to live.

Because cities were built either where no city previously existed or where a small village stood, the maximum population and size were determined before construction began. The planners then allotted adequate space for houses, shops, squares, and temples. They decided how much water would be needed and the number and size of streets, sidewalks, and sewers. By planning this way they tried to satisfy the needs of every individual — rich and poor alike.

The planners agreed that when a city reached its maximum population a new city should be built elsewhere. They recognized the danger of overpopulation. A city forced to grow beyond its walls not only burdened the existing water, sewage, and traffic systems but eventually destroyed the farmland on whose crops the people depended.

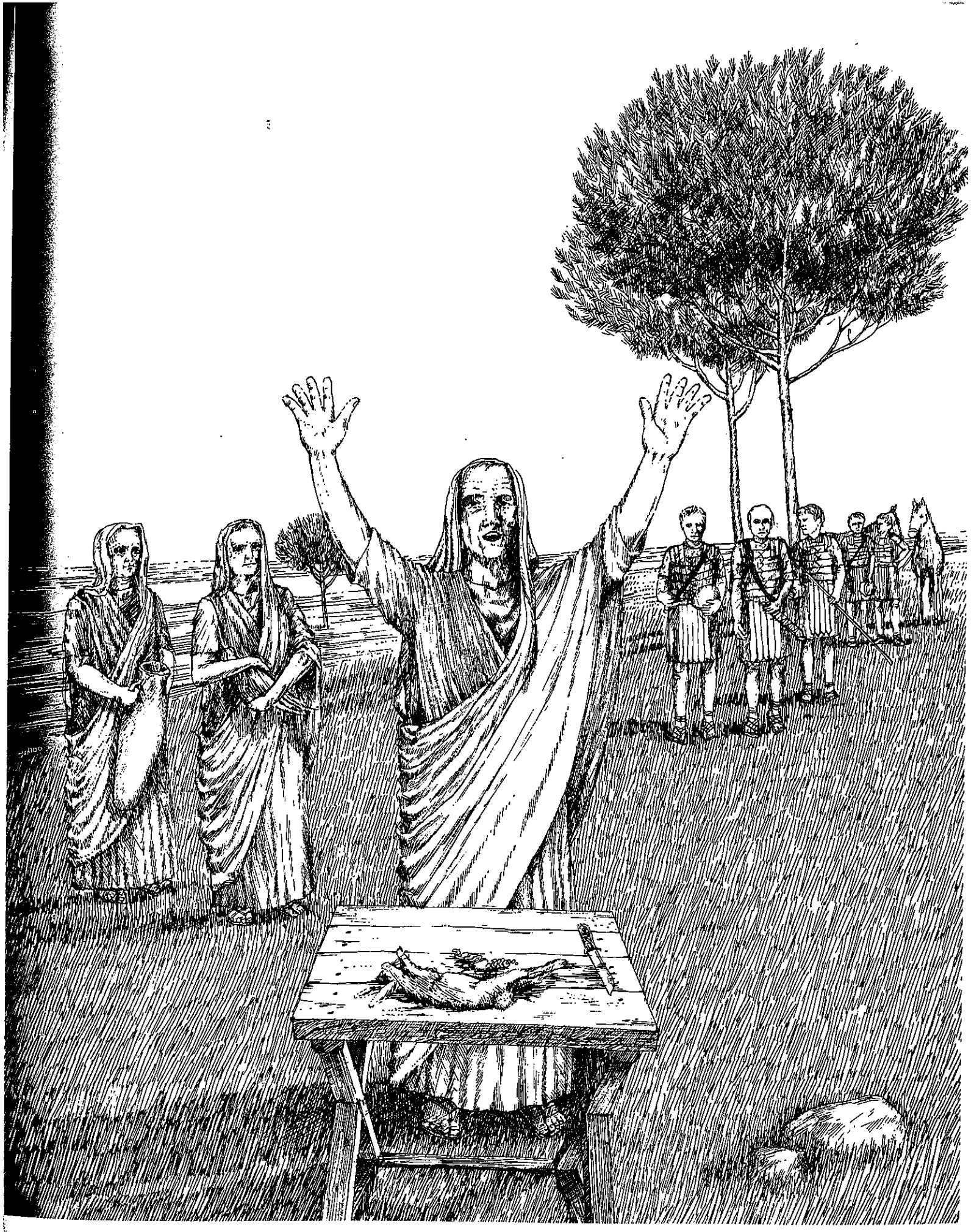
Although Verbonia is imaginary, its planning and construction are based on those of the hundreds of Roman cities founded between 300 B.C. and A.D. 150. No matter what brought about their creation, they were designed and built to serve the needs of all the people who lived within them. This kind of planning is the basis of any truly successful city. The need for it today is greater than ever.



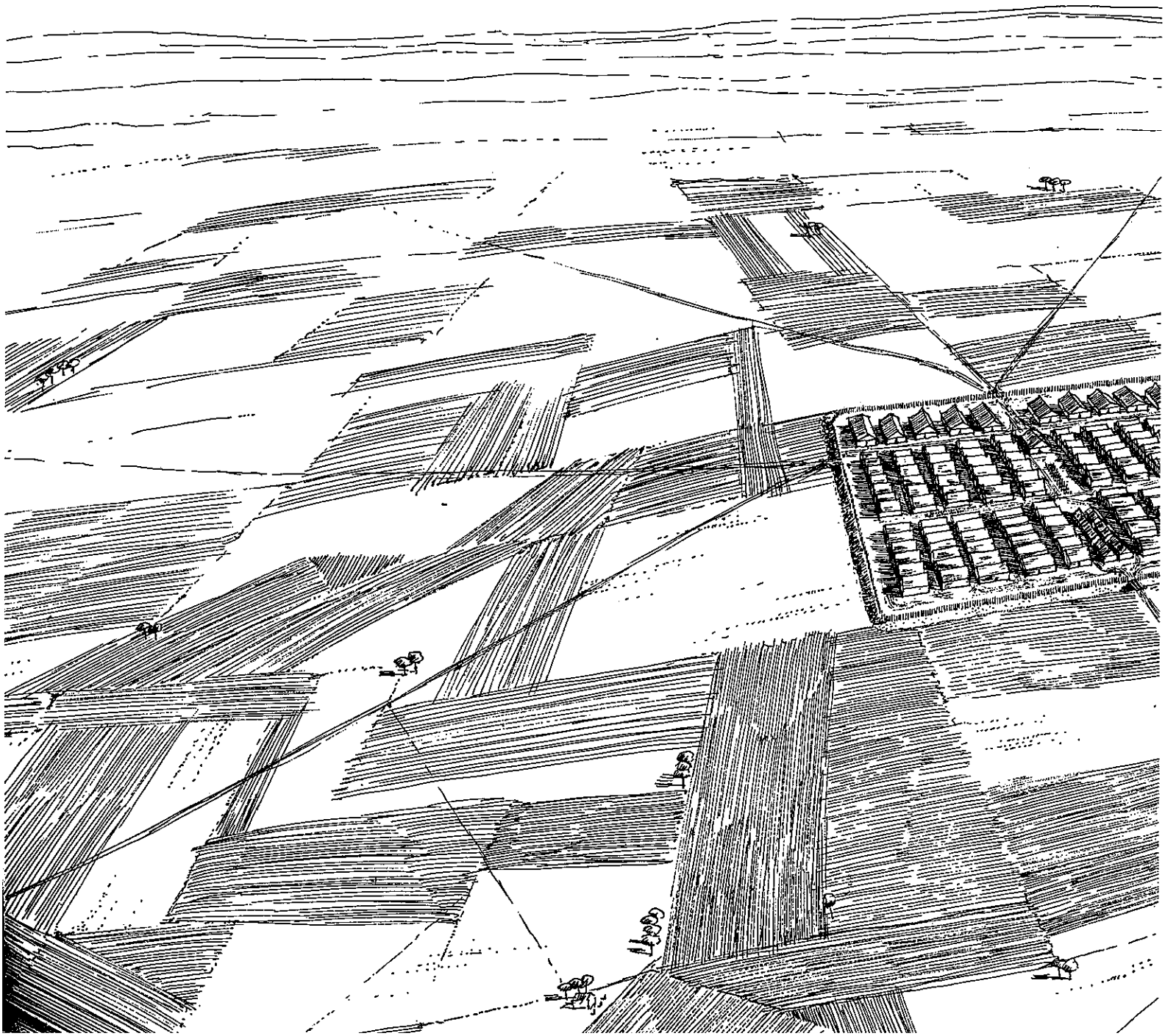
For almost two hundred years the wheat and grapes of northern Italy's fertile Po Valley had been collected in small trading villages and shipped to Rome. In 26 B.C. a disastrous spring flood destroyed the villages along the Po riverbanks as well as an important bridge. When news reached the Emperor Augustus he immediately dispatched to the stricken area forty-five military engineers, including planners, architects, surveyors, and construction specialists. They were to supervise the building of a new bridge and new roads and to lay plans for a new city. The city was named Verbonia, and — in honor of the Emperor — Augusta Verbonia.

Augustus hoped to combine all the remaining trading villages into one secure and efficient trading center and so increase the amount of produce coming into Rome. To speed up development of the new city, he retired to the area two thousand soldiers, who would not only help build Verbonia but also become its first citizens.

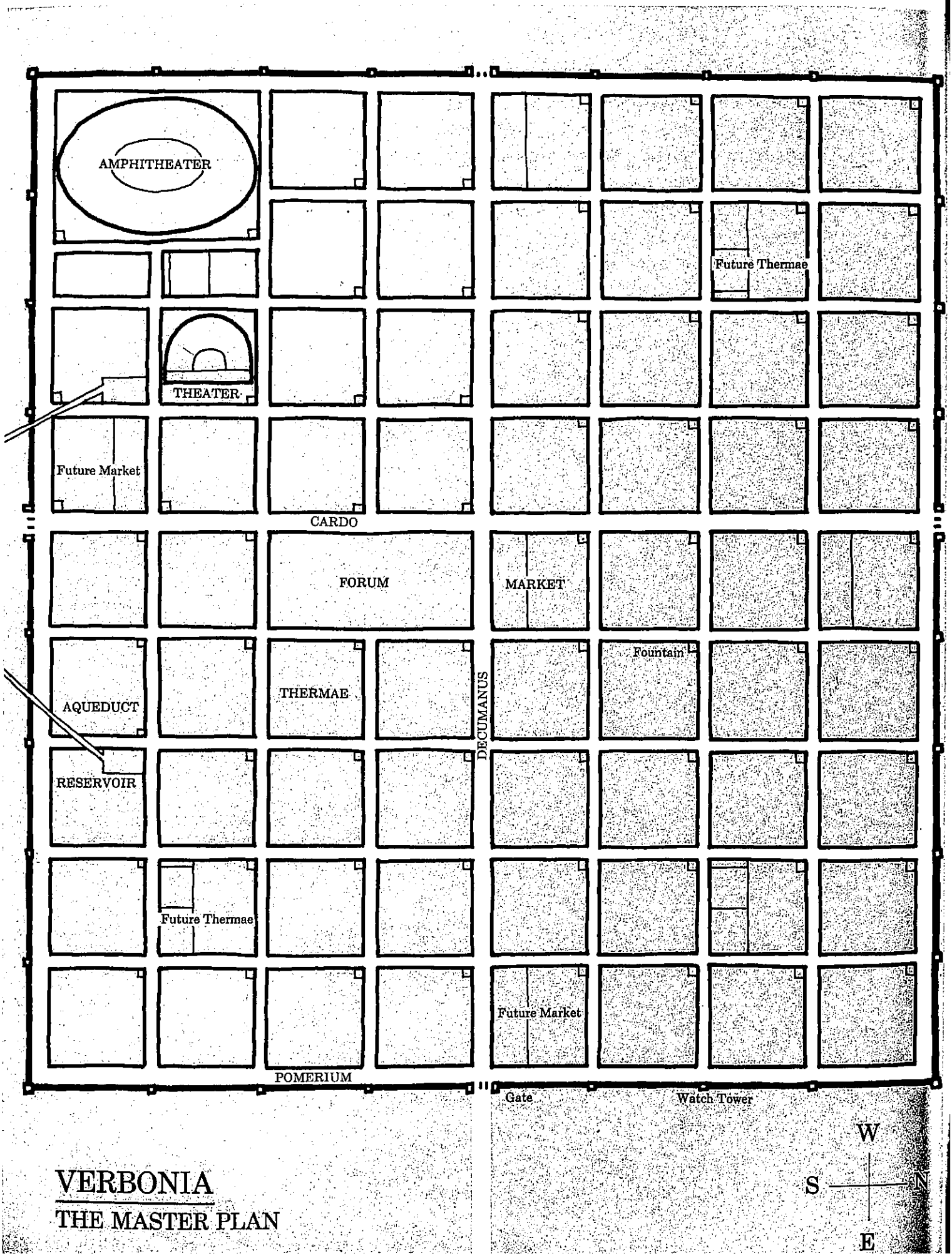
First the surveyors selected the place where the city would be built. They chose a flat but sloping site (to insure good drainage) that was high enough to avoid future floods. A Roman priest examined the livers of a rabbit and a pheasant from the area to find out if it would be a healthy place in which to live. When the animals were found to be without fault and an investigation of the land turned up no stagnant pools, the gods were thanked and the choice of the site was officially confirmed.



The soldiers and the slaves who traveled with them then set up a military camp called a castrum. First they dug a protective ditch and erected a stockade fence around a rectangular area. Next the two main streets were marked off — one running from north to south, the other from east to west. They crossed at right angles above a long open space called the forum where the soldiers would gather daily to receive their orders. At one end of the forum the

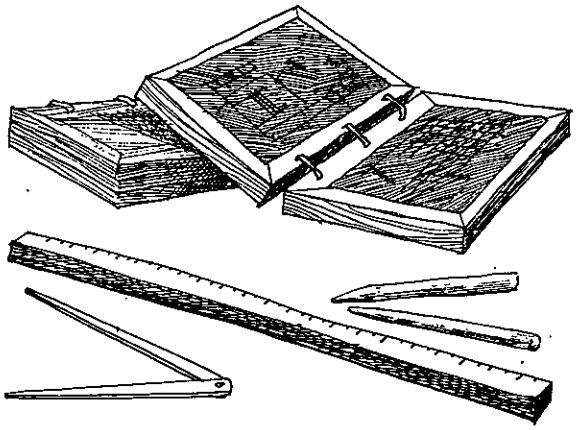


commander's tent was pitched. The tents for soldiers, slaves, and supplies filled the remainder of the castrum and were grouped in rows. In the following months all the tents were replaced by more permanent wooden shelters and a temporary bridge was constructed over boats anchored side by side across the river.



VERBONIA

THE MASTER PLAN

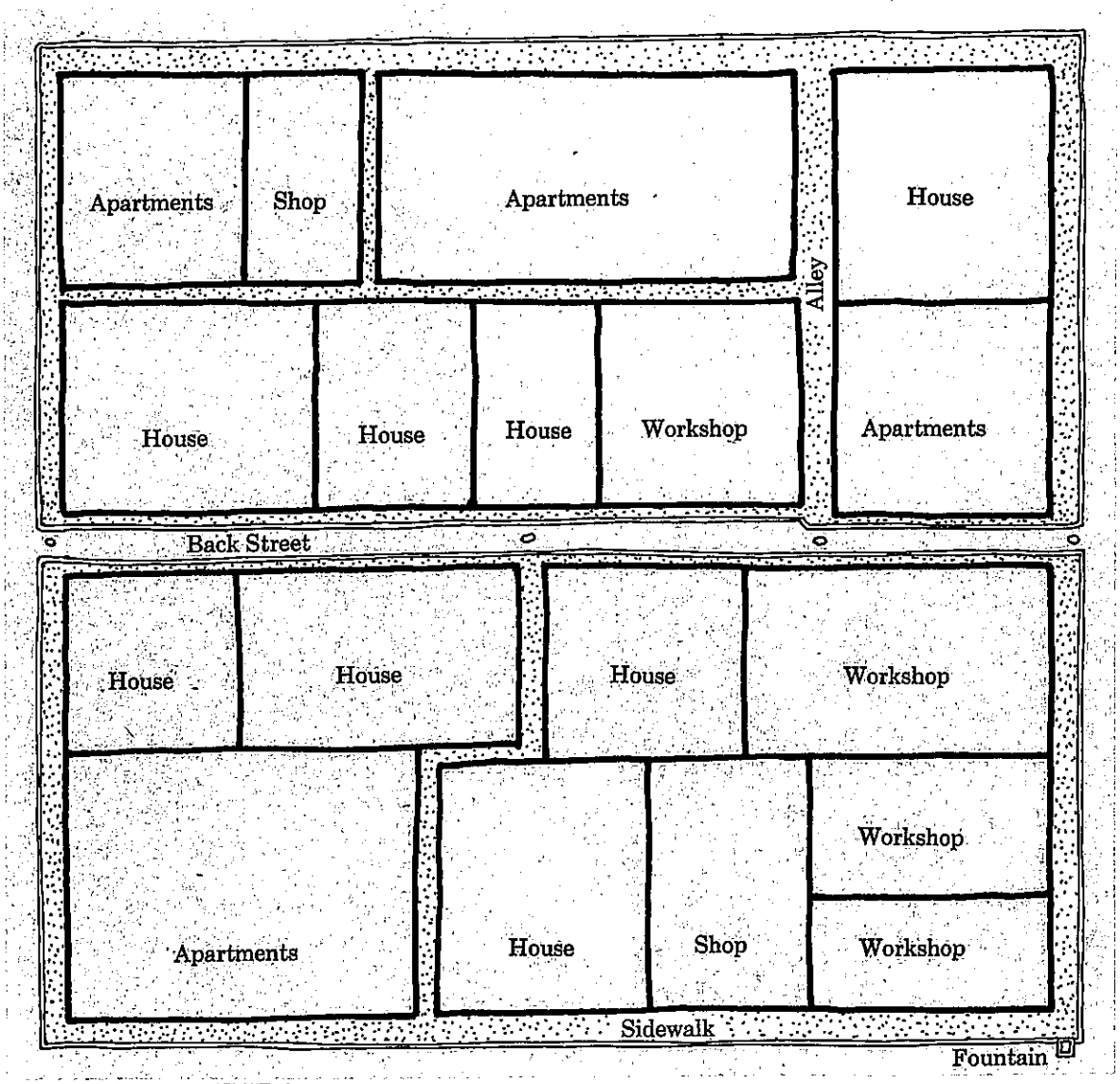


The engineers worked throughout the winter measuring, designing, and drawing. By the spring of 25 B.C. (the Roman year 728) the master plan for Verbonia was ready. The center of the castrum became the center of the city. The main street running from north to south was now called the cardo, the one from east to west, the decumanus. Both were widened and lengthened and the rectangular area of the camp was increased to seven hundred and twenty yards long by six hundred and twenty yards wide. This space allowed a maximum population of approximately 50,000. A greater number, the planners believed, would make the city too large and unable to meet the needs of the people.

The entire area was divided by roads into a chessboard pattern. Almost all of the blocks, called insulae, were eighty yards square. A high wall was designed around the city in which fortified gates were located where the main streets cut through. Around the city but inside the wall a thirty-foot-wide strip of land called the pomerium was marked off. It represented the sacred boundary of the city within which the land was protected by the gods.

The city planners indicated those facilities which served all the residents. They designed a new and larger forum which was to become the government and religious center of the city. They located public water fountains, the aqueduct that would bring the water, a central food market, public baths and toilets, and an entertainment center made up of a theater and amphitheater. They also set aside spaces for future buildings.

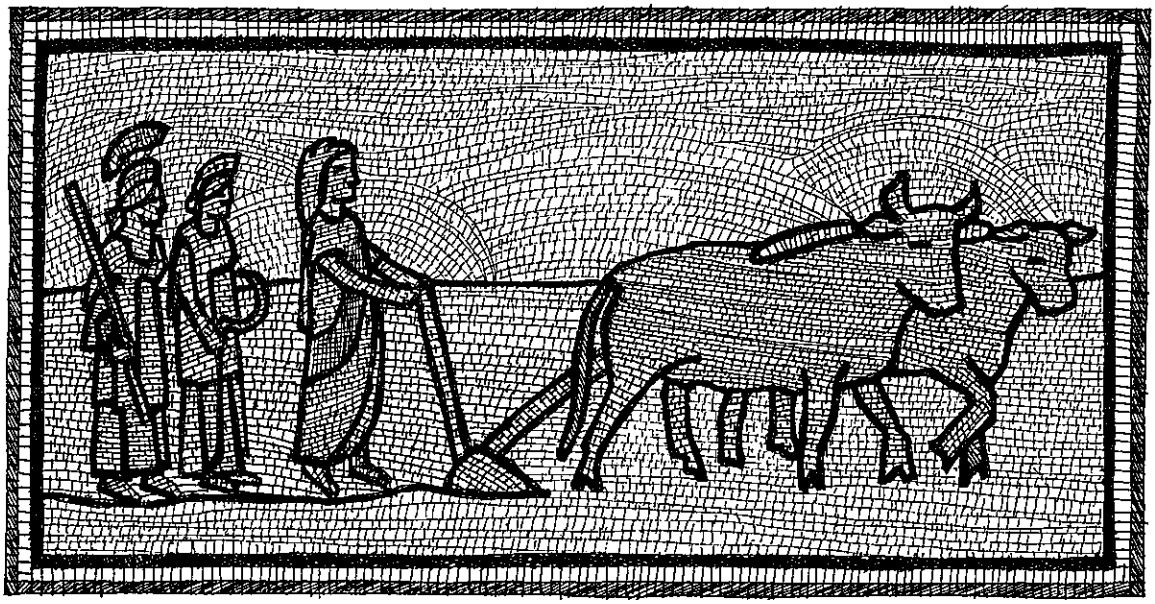
No privately owned building, they decreed, could be higher than twice the width of the street on which it stood. This insured that sunlight always reached the streets. They also required all persons whose buildings faced one of the main streets to build, at their own expense, shelter over the sidewalk for the comfort and protection of all pedestrians.



TYPICAL INSULA

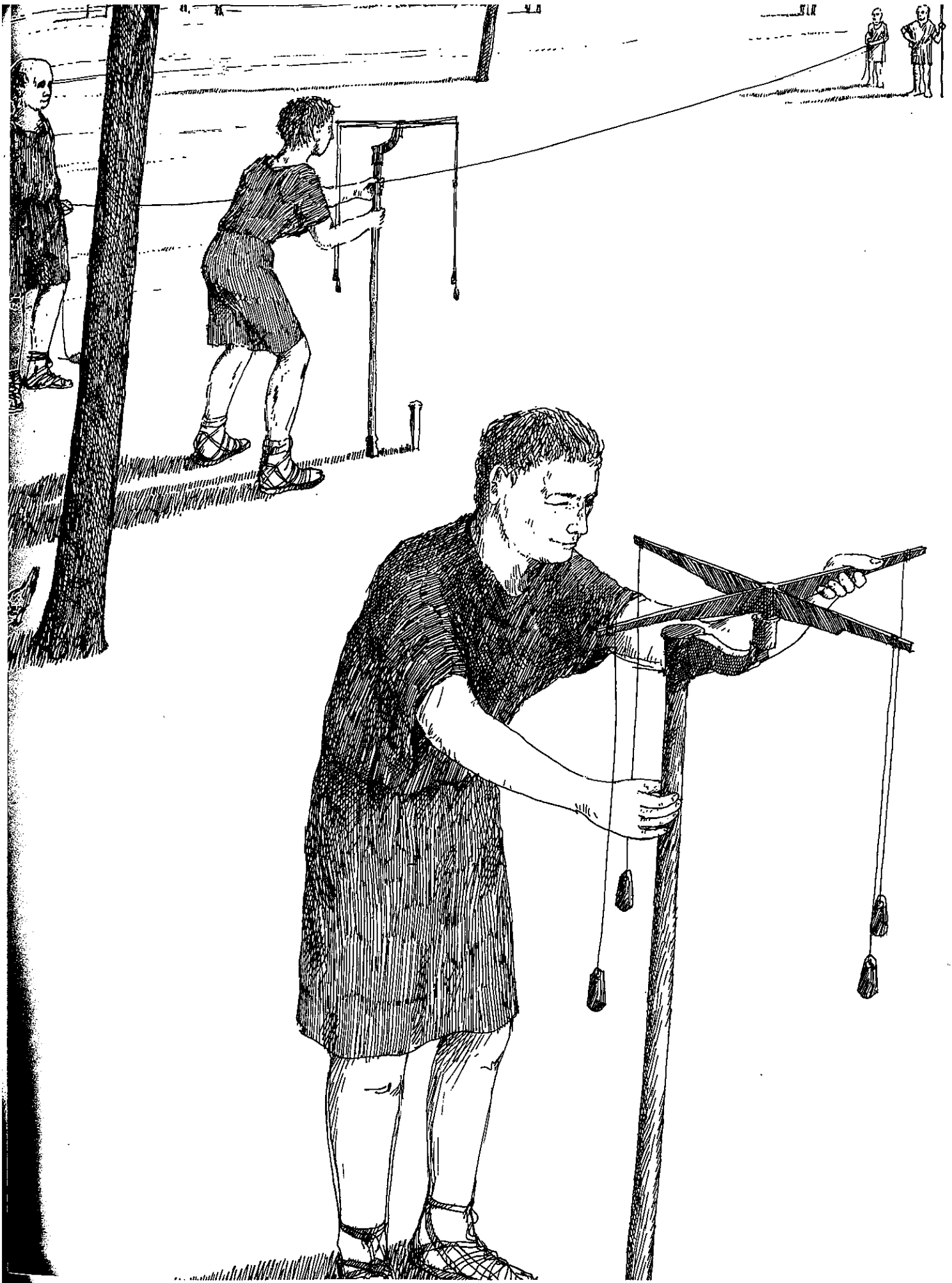
The master plan allowed much freedom for the residents to determine the appearance and character of the city through the buildings they would construct for themselves. Each insula, left deliberately empty on the plan, would eventually be filled with buildings of all sizes and be crossed by narrow back roads and alleys.

Some of the insulae designated for private ownership were divided up among the soldiers, traders, and farmers. The names of the owners and the sizes of their holdings were inscribed on the plan and sent to the land office in Rome. A copy of the plan was carved on marble and stood in the forum for everyone to see. Even though land was given to Verbonia's first settlers, each person had to pay for the construction of his own house.

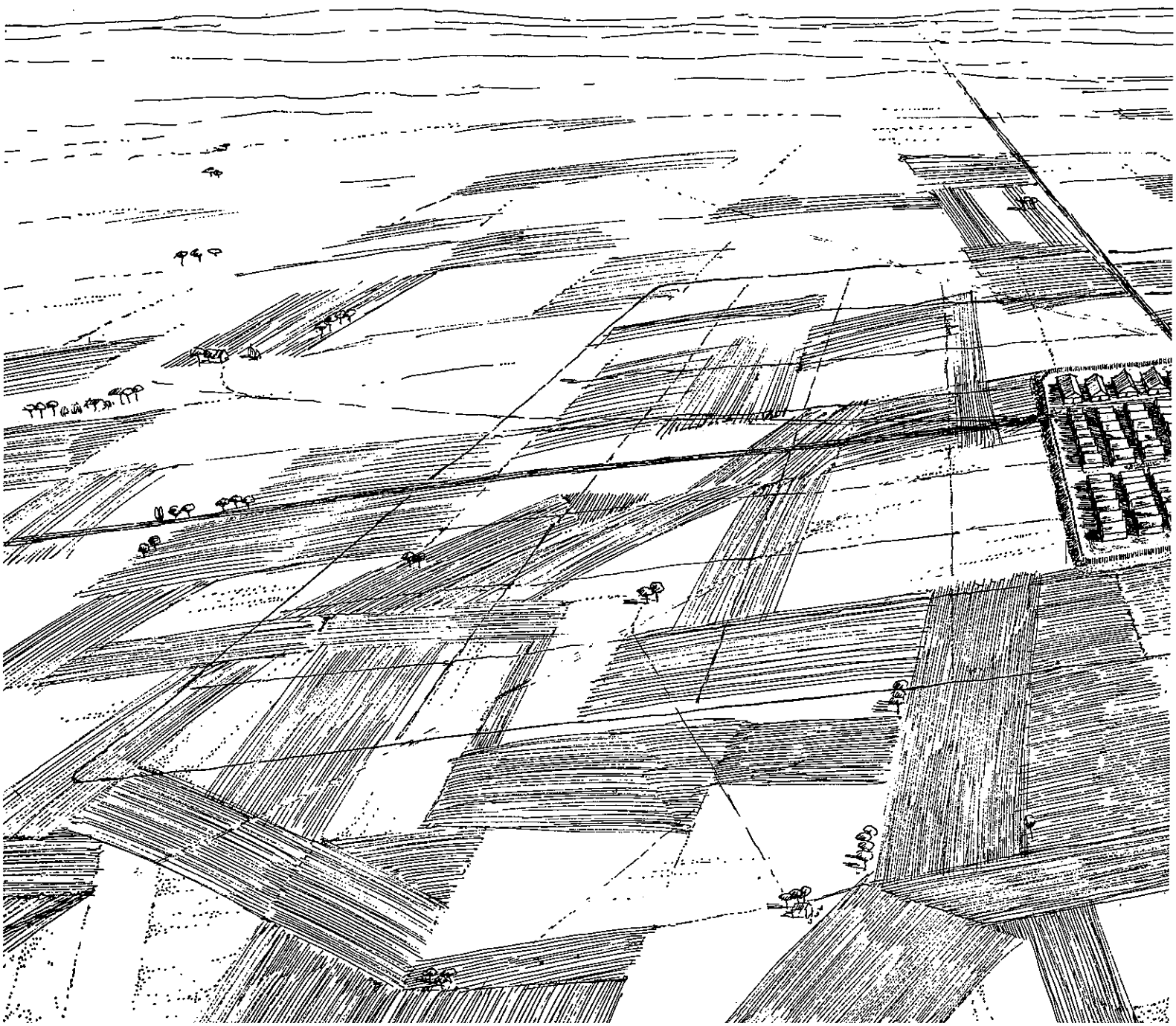


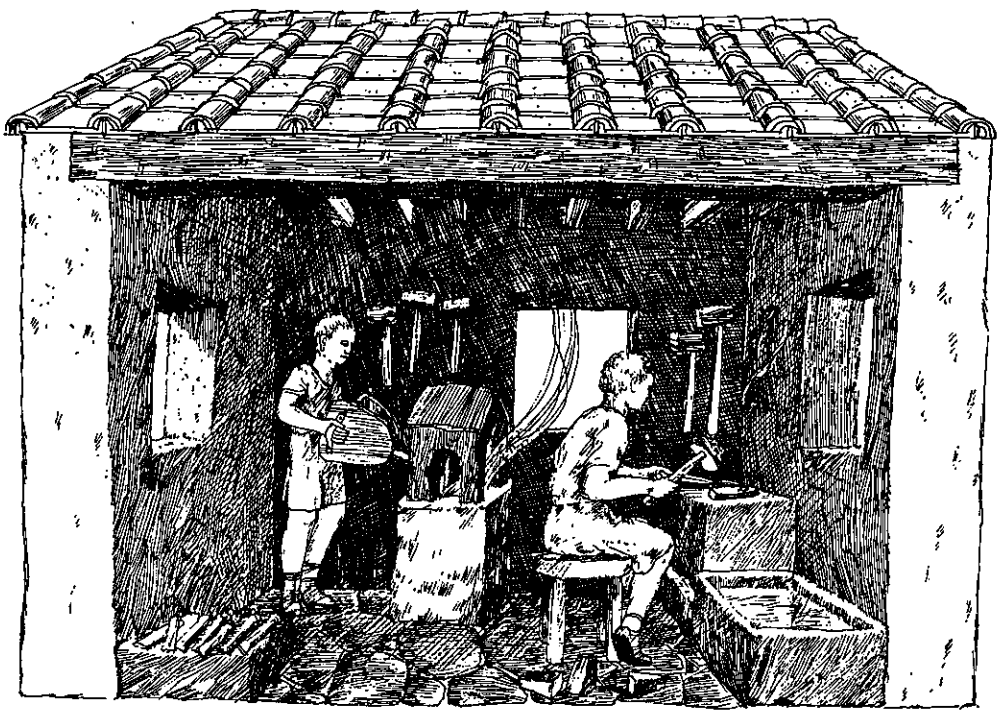
In the early summer of 25 B.C. a plow drawn by a white cow and a white bull guided by a Roman priest cut a furrow around the site. This solemn religious ceremony marked the location of the city wall and insured further protection by the gods. The plow was lifted only where gates were to be built.

Following the ceremony the surveyors marked off the roads using an instrument called a groma to make certain that all roads intersected at right angles. The groma was a pole about four feet high on top of which a cross was laid flat. When weighted strings hanging from each end of the cross hung parallel to the center pole the groma was known to be perpendicular to the ground. The streets could be accurately marked off by sighting down the intersecting arms of the cross.



The same method was used to mark off roads and farmland outside the city.

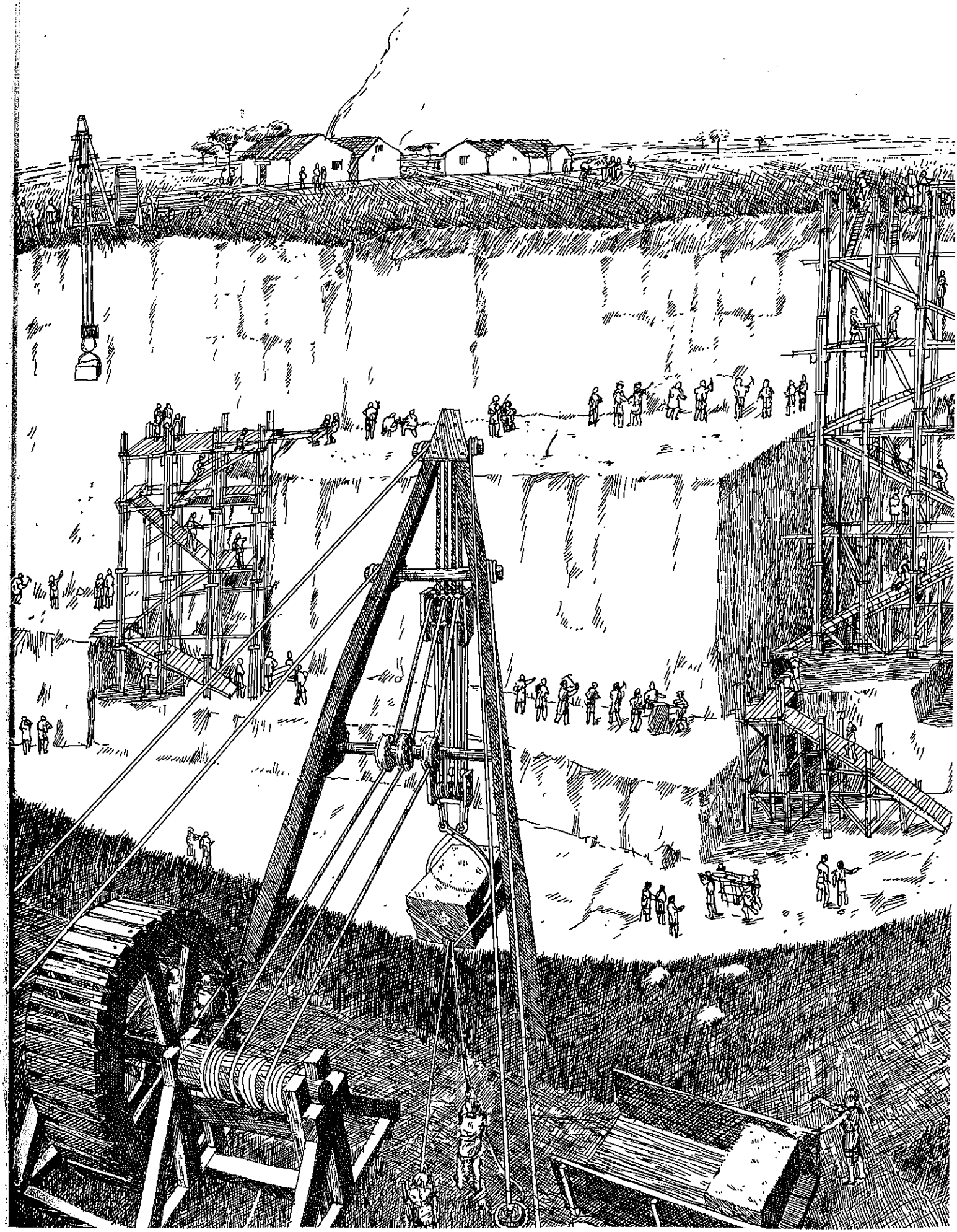




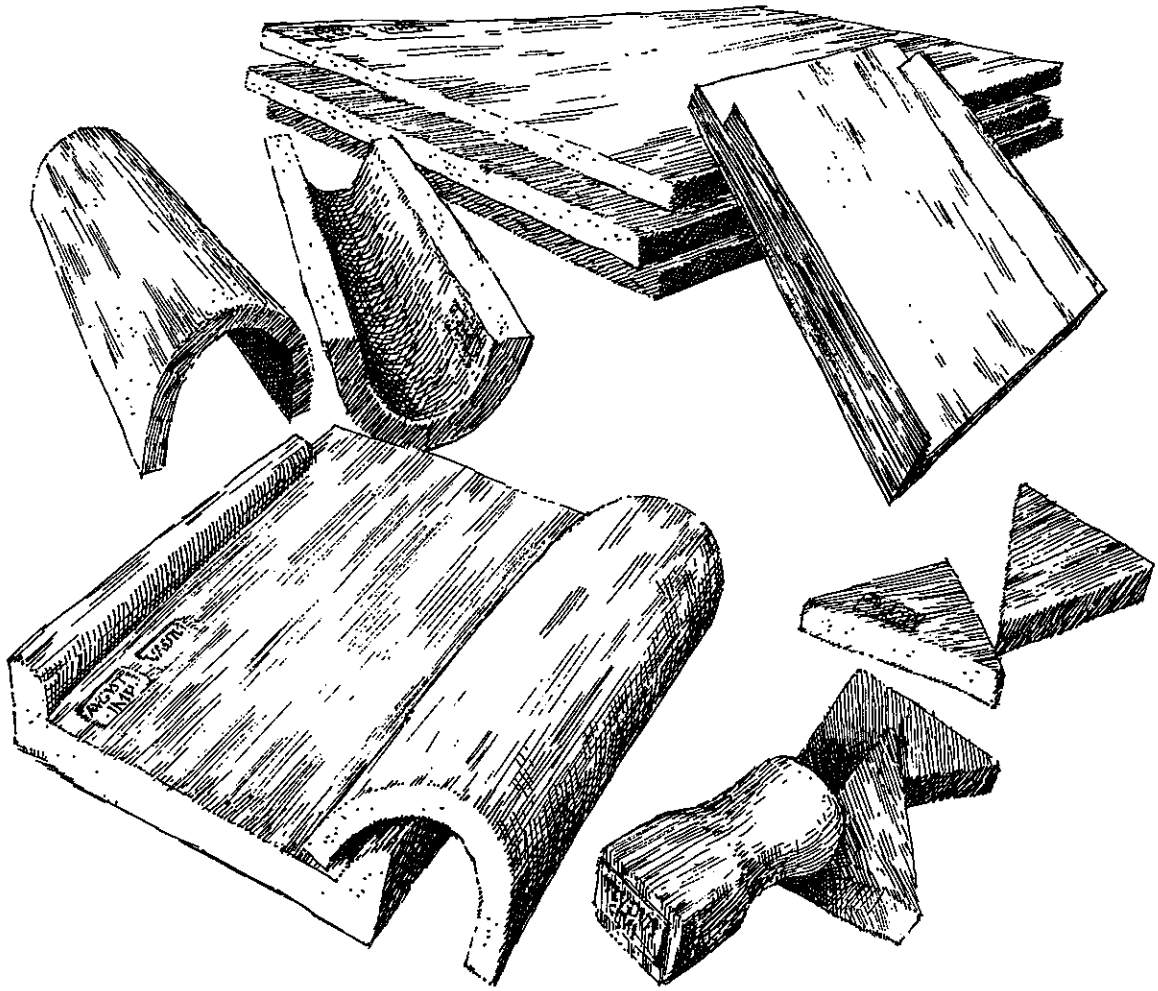
The materials used most in the construction of Verbonia were stone, clay, mortar, and wood. The stone came from a limestone quarry owned by the government. Besides many work sheds, the quarry contained a forge for making and repairing tools and a carpenter's shop in which cranes and pulleys were built.

The skilled laborers cut, polished, or carved inscriptions in the stone. The unskilled workers separated and lifted the huge blocks from the earth. The stone was usually cut with a saw. When the stone was very hard, the blade used in the saw had no teeth; sand and steel filings were placed under the blade and the back-and-forth motion of the saw ground away the stone.

When the stone could not be sawed, a row of holes was drilled where it was to be divided. Wooden stakes were then jammed into the holes. When water was poured over the stakes, they swelled, splitting the stone along the line of holes.

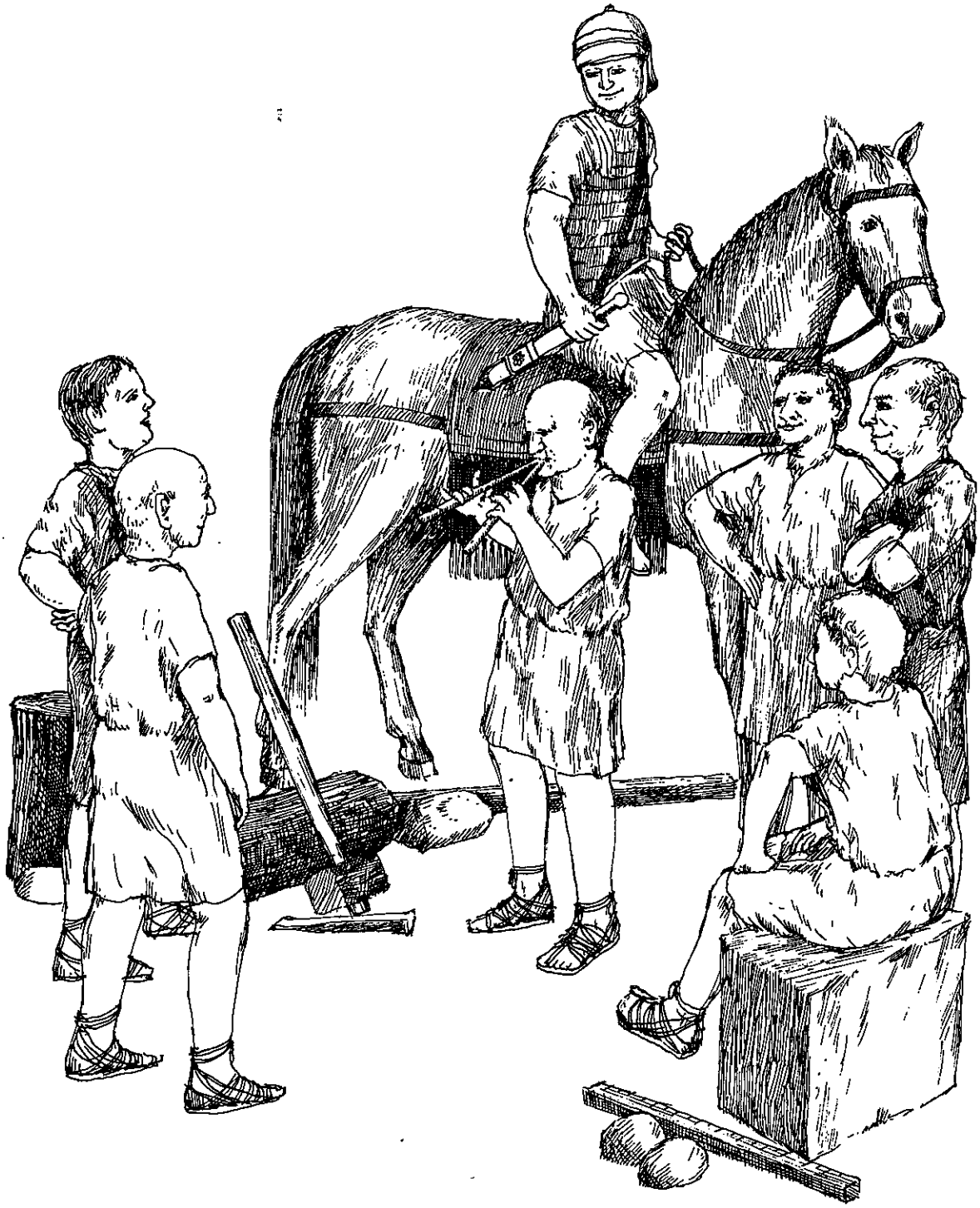


The clay was made into bricks and tiles in factories near Arretium. The clay, dug out of large pits in the ground, was formed into standard shapes and sizes using wooden molds. The mold was then removed and the wet clay placed in an oven to dry and harden. All bricks and tiles were stamped with the name of the factory owner and the name of the Emperor.

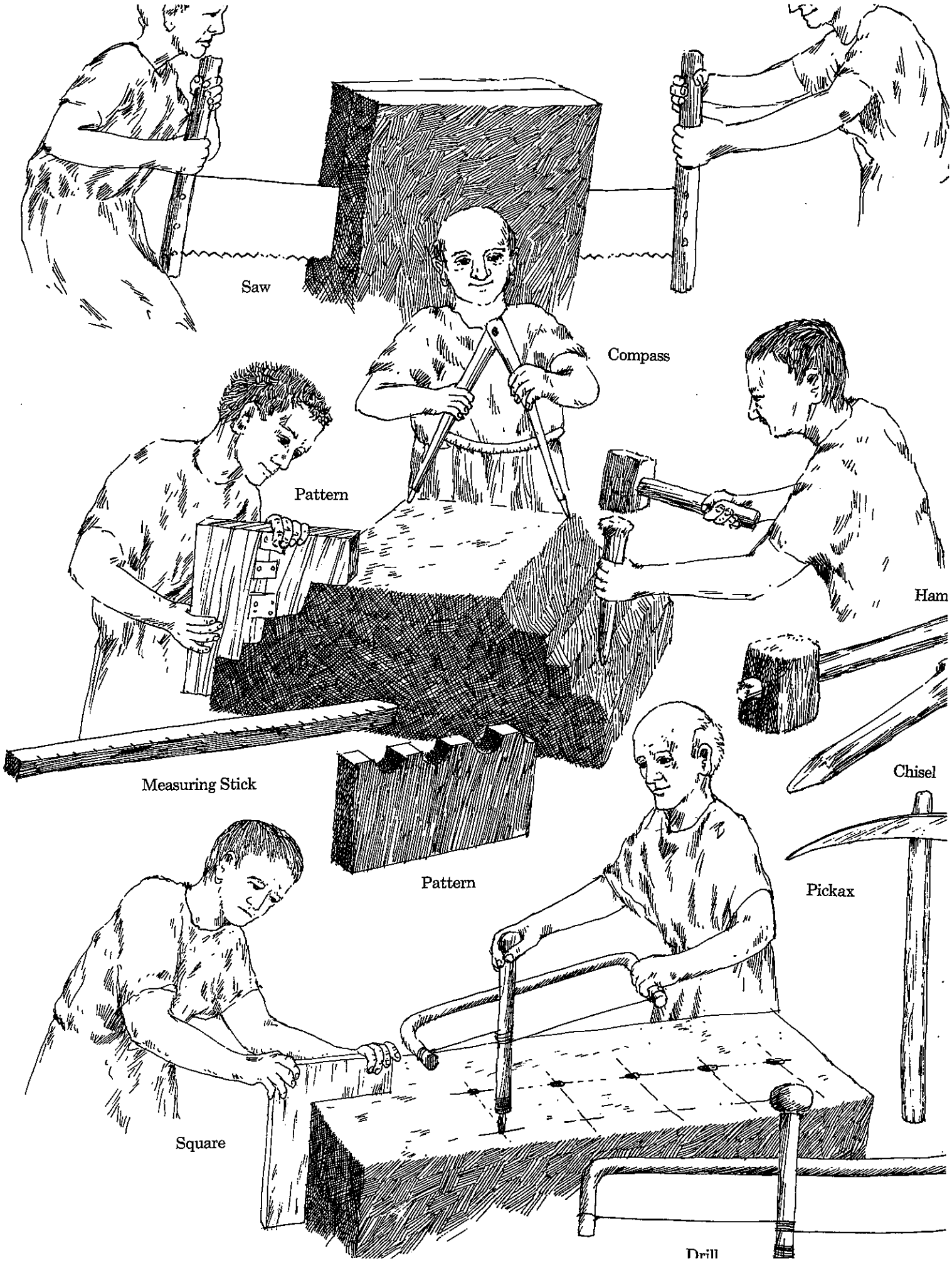


The mortar used between bricks and stones and in concrete was a mixture of sand, lime (a powder obtained by burning limestone), and water. When mortar was used in construction underwater, a gravelly substance called pozzolana was added which made the mortar become extremely hard when it set.

The wood used for scaffolding and roof framework came from a forest at the foot of the Apennine mountains to the south.



Before building could begin, laborers had to be found. Besides the soldiers many poor farmers from the countryside came to work and settle in the city. The majority of workers however were slaves, either owned by the state or by wealthy businessmen, or they were prisoners of war from Gaul, Greece, or Egypt. Unless they were skilled, the laborers were formed into work gangs to do jobs requiring no particular skill. To maintain as high a level of work as possible the laborers were treated almost as well as the soldiers.


Saw
Compass
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Ham
Measuring Stick
Chisel
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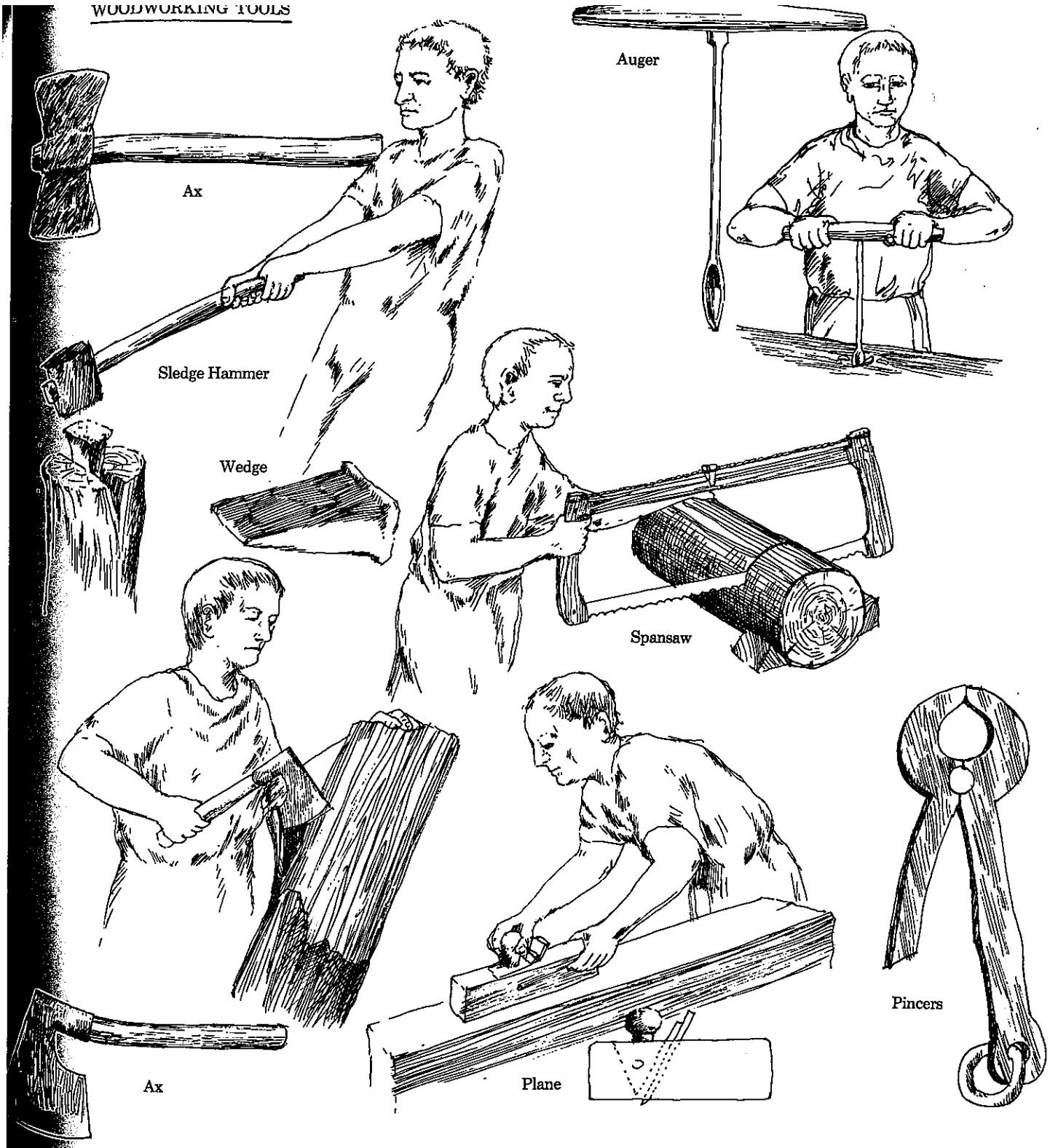
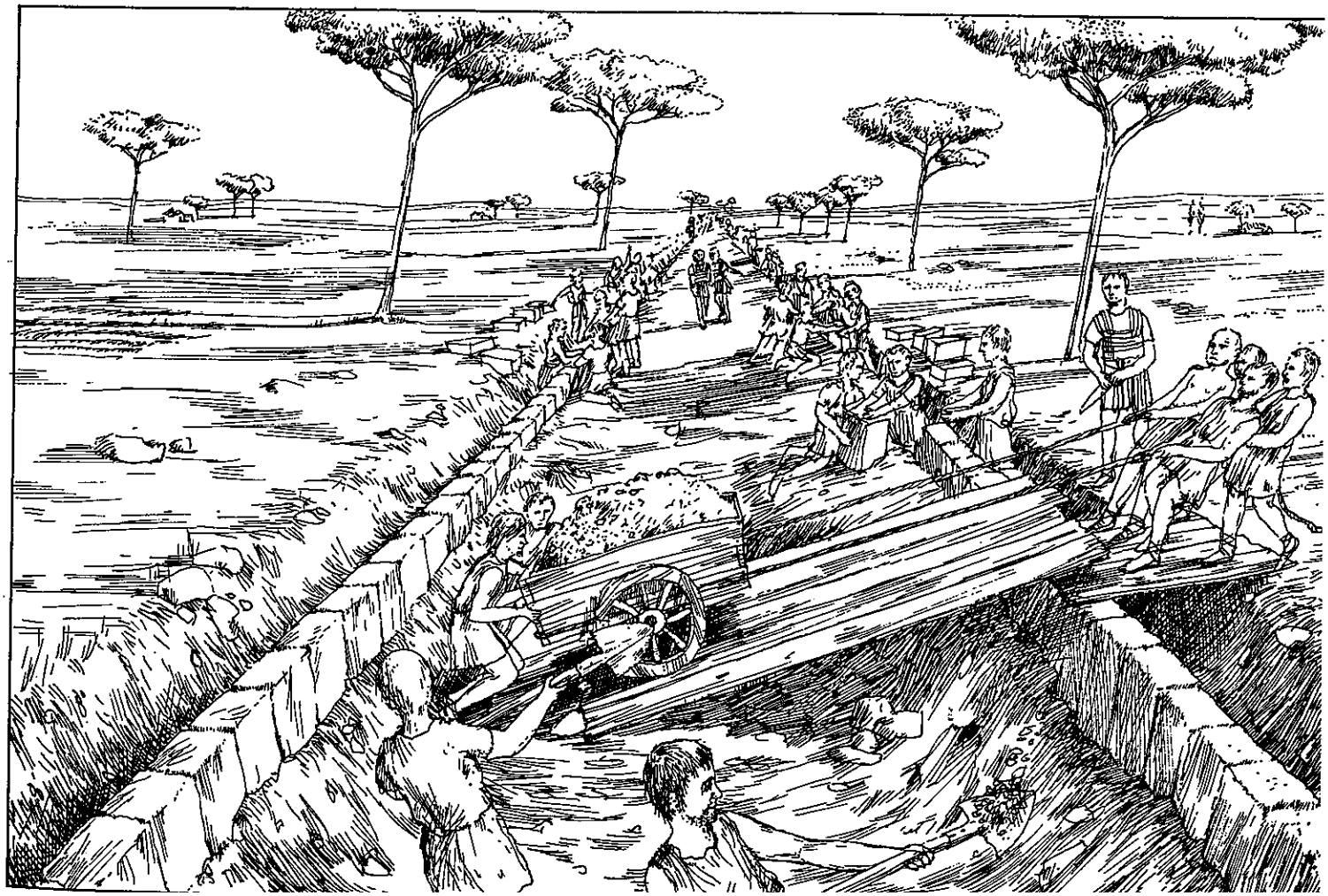
Pickax
Square
Drill



A great variety of tools was needed throughout the construction of the city. Most were made in forges and workshops on the site. The more precise measuring instruments and squares were brought from Rome.



The new roads and bridge were completed before work began on the city itself. Once the surveyors had marked out a road with stakes, a ditch was dug on each side into which a row of curbstones was set. A deeper ditch was then dug between the two rows of curbstones which was filled with layers of stones of varying size. The top layer formed the pavement of the road and rose slightly in the center to force the rainwater into the side ditches. The pavement was constructed of flat stones that were carefully fitted together. Any spaces left between them were filled with smaller stones or pieces of scrap iron.